Modern Concepts of Cardiovascular Disease

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PUBLIC HEALTH ASPECTS OF HEART DISEASE

A disease is a public health problem when it is either a menace or burden to the community. Judged by these standards, heart disease comes within this category. Certain of its causes such as syphilis, rheumatic infection, diphtheria and scarlet fever are in varying degrees communicable. The economic loss it entails has never been calculated; the suffering it causes is incalculable.

Heart disease differs from other public health problems. Unlike tuberculosis, typhoid fever and other infectious diseases it is a generic term covering a group of widely unrelated conditions due to congenital, infectious, metabolic, other or undetermined causes. As in the proper clinical management, efforts in the direction of prevention are dependent on the etiologic viewpoint.

The statement that heart disease is the leading cause of death is household knowledge. In fact, too much emphasis has been placed upon it. Over 40 per cent of deaths from heart disease in the United States occur in persons past 70 years. While there has been an aging of the population on account of reducing deaths from infectious diseases, the span of life has not been increased. Despite the optimistic predictions of food faddists, Sunday supplement endocrinologists, and other enthusiasts a material increase in the human life span is unlikely. As a result of saving life in the earlier decades, more deaths from heart disease are inevitable.

While heart disease is a public health problem, the prevention and postponement of its more serious consequences are not as a rule amenable to methods of administrative control. The clinician and not the public health official bears the brunt of the attack. Their cooperation is essential, as witnessed in the current campaign against syphilis. The clinician who prevents cardiac patients from occupying hospital beds at public expense conserves the public funds. Health authorities should take keener interest in heart clinics, undertake studies on the mass effects of heart disease, and encourage research, especially that relating to its etiology.

MORBIDITY. Estimates of heart disease morbidity vary considerably, dependent on whether all patients with cardiac defects are included, or only those persons with clinical manifestations. Emerson estimated that in 1931 there were between 2,330,397 and 3,665,062 persons in the United States with some form of heart disease, or 1.9 to 2.9 per cent of the population. The Hagerstown survey revealed an annual morbidity rate for cardiovascular diseases of 18.3 per 1,000. School surveys range from 0.5 to 4.0 per cent, the consensus being about 1.0 per cent. During the World War 26 draftees per 1,000 were rejected for heart disease. Approximately 2.0 per cent of applicants for life insurance fail to pass on account of this cause.

MORTALITY. There has been an almost constant increase in the death rate from heart disease over a number of years. In the decade between 1920 and 1930 it rose from 159 to 214 per 100,000. In 1935 the rate was 224 per 100,000. It is higher among males than females and among white persons than Negroes, except in the age groups above 75 years. It accounts for about 20 per cent of the total mortality.

The situation is not as bad as might be supposed. A substantial reduction has been shown in persons under about 40 years in independent studies by Cohn and by Armstrong and Dublin. The experience of the industrial department of the Metropolitan Life Insurance Company indicates that there has been no increase in heart disease mortality. Bolduan & Bolduan point out that its increase in New York City is largely fictitious when considered in conjunction with cerebral hemorrhage, nephritis, senility, and arteriosclerosis.

The writer found that 20 per cent of deaths in hospitals in a large city recorded by the office of vital statistics as heart disease were due to other causes. On the other hand only 62 per cent of deaths actually due to heart disease were so recorded, due largely to the failure to tabulate deaths as heart disease when reported on the basis of etiology.

ECONOMIC LOSSES. According to the Committee on the Costs of Medical Care, heart disease is the ninth most expensive illness. The average professional charge per case per year was $49.56. It accounted for 2.5 per cent of the total charges. It is estimated that it costs over $60,000,000 annually for medical care including physicians' fees, nursing, drugs, and hospitalization.

Bigelow and Lombard estimated that in Massachusetts in 1931 there were 84,000 persons over 40

years of age with heart disease, 2,605 of whom were totally disabled. Including the partially disabled 5,377 years were lost annually amounting to $6,452,000 in wages. At this rate heart disease costs the United States about $250,000,000 a year in lost wages, taking into consideration that approximately 20 per cent occur before 40 years of age.

Not all types have an equal public health significance. The incidence, age distribution, factor of infection, chronicity and other factors require consideration. Some kinds of heart disease are at present preventable, some potentially preventable, while among others an increase can be expected.

CONGENITAL MALFORMATIONS. Account for less than two per cent of heart disease. Frequently associated with other congenital deformities. Not regarded as an important public health problem. No method of prevention.

DIPHTHERIA. Results in less than one per cent of heart disease. With active immunization, early diagnosis, and proper treatment, this should cease to be a problem.

RHEUMATIC INFECTION. Due to its prevalence, age distribution, extreme chronicity, influence on industry and the home, rejections for military service and relatively early ages of death, rheumatic heart disease is an extremely important public health problem. It results in 15-40 per cent of heart disease, depending on the locality. The average age at death is about 30 years. It causes at least 40,000 deaths in the United States annually. Paul estimates there are 840,000 cases.

The incidence of multiple cases in a family, occasional outbreaks in institutions, recrudescences in cardiac hospitals and certain clinical features point to an infective background. Apparently it is somewhat less common than a generation ago. It is less frequent, but by no means rare, among the better-to-do than the under-privileged. To a large extent it is a product of industrialized urbanization. It seems to be distinctly less common in the South.

The etiology is unknown. Even though the causative micro-organism were discovered, it is doubtful if active immunity could be developed. For the time being, prevention is limited to the proper management of early cases and better child care. These are largely dependent on raising the general standard of living. The public should be educated to the potential seriousness of muscle or joint pains in children. School health examinations should be better utilized for discovering early cases. Sending children to warm climates is helpful in selected cases, but is hard to visualize on a large scale.

SCARLET FEVER. This occasionally results in heart disease usually indistinguishable from rheumatic heart disease. It may reactivate rheumatic infection. A better method of active immunization against scarlet fever is needed.

SUBACUTE BACTERIAL ENDOCARDITIS. As this is usually superimposed on rheumatic lesions, prevention is in a measure dependent on reduction of rheumatic heart disease.

THYROID DISEASE. Accounts for less than 5 per cent of heart disease. With improvement and more widespread use of diagnostic facilities and greater alertness for masked forms, reduction in heart disease associated with hyperthyroidism or myxedema is confidently expected.

SYPHILIS. Results in 5-10 per cent of heart disease. Among Negro males it accounts for about 20 per cent. Disability and death occur mostly in the 40-60 year period.

Its prevention depends upon early and adequate treatment. Progress has been made in the Scandinavian countries, Great Britain and New England. The U. S. Public Health Service is sponsoring a syphilis control program. *Hospitals and clinics can assist by recording the present incidence of cardiovascular syphilis as a base line to determine future improvement.*

ARTERIOSCLEROSIS AND HYPERTENSION. Three factors play a role in this rather heterogeneous group — arterial hypertension, coronary arteriosclerosis and generalized vascular sclerosis. Altogether it is responsible for about 60 per cent of heart disease. This group has a public health significance insofar as it results in disability and death before completion of the normal life span. Many deaths occur at very advanced ages. Here heart disease is the clinical expression of a general involution.

Coronary arteriosclerosis and arterial hypertension in middle life constitute an important and probably increasing problem. The average age at death from coronary thrombosis is about 60 years. It appears to be more frequent among business and professional groups than wage earners. It is more frequent among males than females, Jews than Gentiles, and white persons than Negroes. It is a sad commentary that many useful citizens die prematurely from overwork while others remain unemployed.

The problem of arterial hypertension is a challenge to medical research. Fahr estimates that 140,000 persons in the United States die annually from essential hypertension, about 70,000 from heart disease. Unlike coronary thrombosis or angina pectoris, hypertension is extremely common in the Negro race in which it develops earlier, is accompanied by a more fulminating hypertension, and results in death about 10 years sooner than among white persons.

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